

DATA RANGE
FROM 2019 AND 2020

TCEQ ENVIRONMENTAL HEALTH UPDATE

This update is based on the latest available health data (up to 2019 for blood lead data and cancer incidence, and 2020 for overall mortality rates and for asthma endpoints). Also presented are environmental data from 2020 to match the health data.



About the Texas Commission on Environmental Quality (TCEQ) Toxicology, Risk Assessment, and Research Division (TD)

- The TD helps TCEQ make scientifically sound decisions by applying toxicological principles when evaluating environmental data, issuing authorizations, developing environmental regulations, and making policy decisions. The TD also conducts research to address environmental toxicology questions that are important to the state of Texas.
- TCEQ toxicologists identify chemical hazards, evaluate potential exposures, assess human health risks, and communicate risks to the general public and stakeholders.

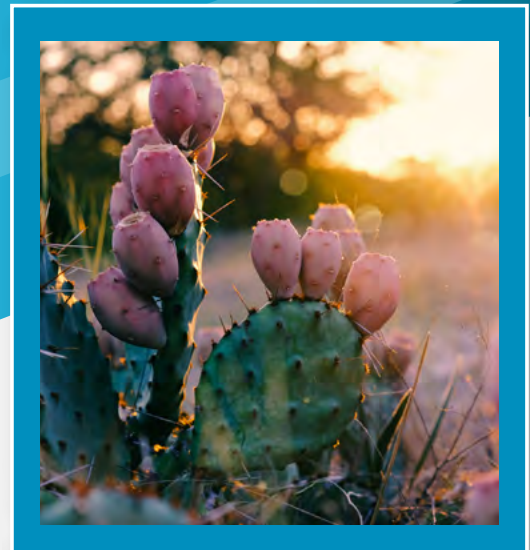


TOXICOLOGY, RISK
ASSESSMENT, AND
RESEARCH DIVISION

Table of Contents

Statewide Environmental Health Updates	2
Air Quality	2
Ambient Air Monitoring	2
Programs to Decrease Ambient Air Toxics	2
Air Pollutant Watch List.....	3
Drinking Water Notices	4
Health Indicators	5
Lead Data	5
Cancer Data	6
Asthma Data	7
Mortality in Texas	8
Regional Updates	10
Region 1: Amarillo Area	10
Region 2: Lubbock Area	11
Region 3: Abilene Area	12
Region 4: Dallas-Fort Worth Area.....	13
Region 5: Tyler Area	14
Region 6: El Paso Area	15
Region 7: Midland Area	16
Region 8: San Angelo Area	17
Region 9: Waco Area.....	18
Region 10: Beaumont Area	19
Region 11: Austin Area	20
Region 12: Houston Area	21
Region 13: San Antonio Area	22
Region 14: Corpus Christi Area.....	23
Region 15: Harlingen Area	24
Region 16: Laredo Area.....	25
Data Sources List	26

TCEQ ENVIRONMENTAL HEALTH UPDATE



Common Terms

Air monitoring comparison values (AMCVs) are chemical-specific short- and long-term air concentrations used to evaluate air monitoring data. These values are developed to protect human health and welfare, and are set well below levels where health effects are known to occur. Slight exceedances of AMCVs will not necessarily lead to health effects, but the TCEQ works to keep ambient air concentrations below AMCVs.

Air toxics, also known as hazardous air pollutants (HAPs), are pollutants that are known or suspected to cause cancer or other serious health effects. Benzene, arsenic, and mercury are examples of air toxics.

Automated gas chromatograph (autoGC) is a sampler that measures volatile organic compounds every hour, continuously, 22 hours per day, and 7 days per week.

A canister sampler collects volatile organic compounds during a 24-hour sampling duration once every-sixth-day.

Volatile organic compounds (VOCs) are potentially toxic chemicals that readily evaporate into the air and are often used as solvents, degreasers, paint thinners, and fuels (e.g., benzene).

Statewide Environmental Health Updates

Air Quality

Ambient Air Monitoring

- Data from monitoring air toxics can be used for finding pollution sources, evaluating air permit applications, and identifying potential health concerns.
- The TCEQ toxicology staff uses ambient air monitoring data to assess the potential for measured concentrations of air toxics to impair health and/or cause odors. Benzene is of particular focus because it is the chemical that is measured closest to its AMCV.
- In 2020, all monitors in Texas had annual average benzene concentrations below the state's long-term AMCV, except for one monitoring site (Channelview Drive Water Tower) in TCEQ Region 12, Houston. Figure 1 shows the average benzene concentrations at many of the monitoring sites in some major Texas cities.

Programs to Decrease Ambient Air Toxics

The TCEQ uses **air permitting**, **ambient air monitoring**, and the **Air Pollution Watch List (APWL)** to ensure

that ambient air toxic concentrations are at levels that are protective of public health and welfare (Figure 2).

FIGURE 2
Three State Programs to Decrease Ambient Air Toxic Levels

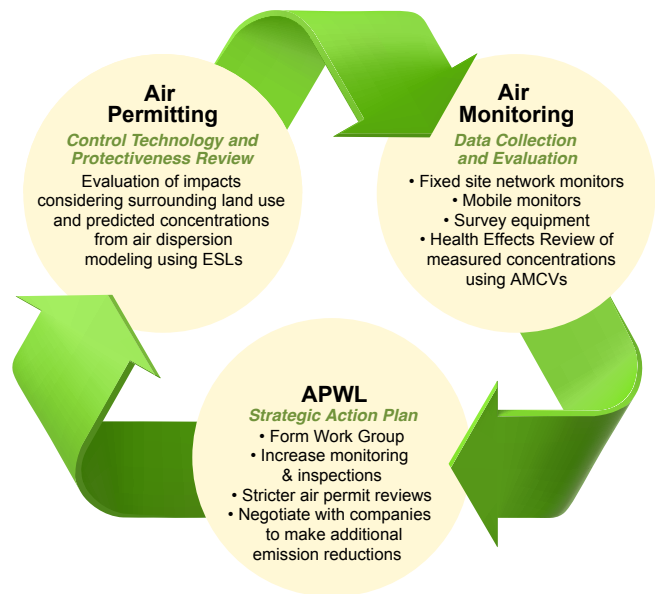
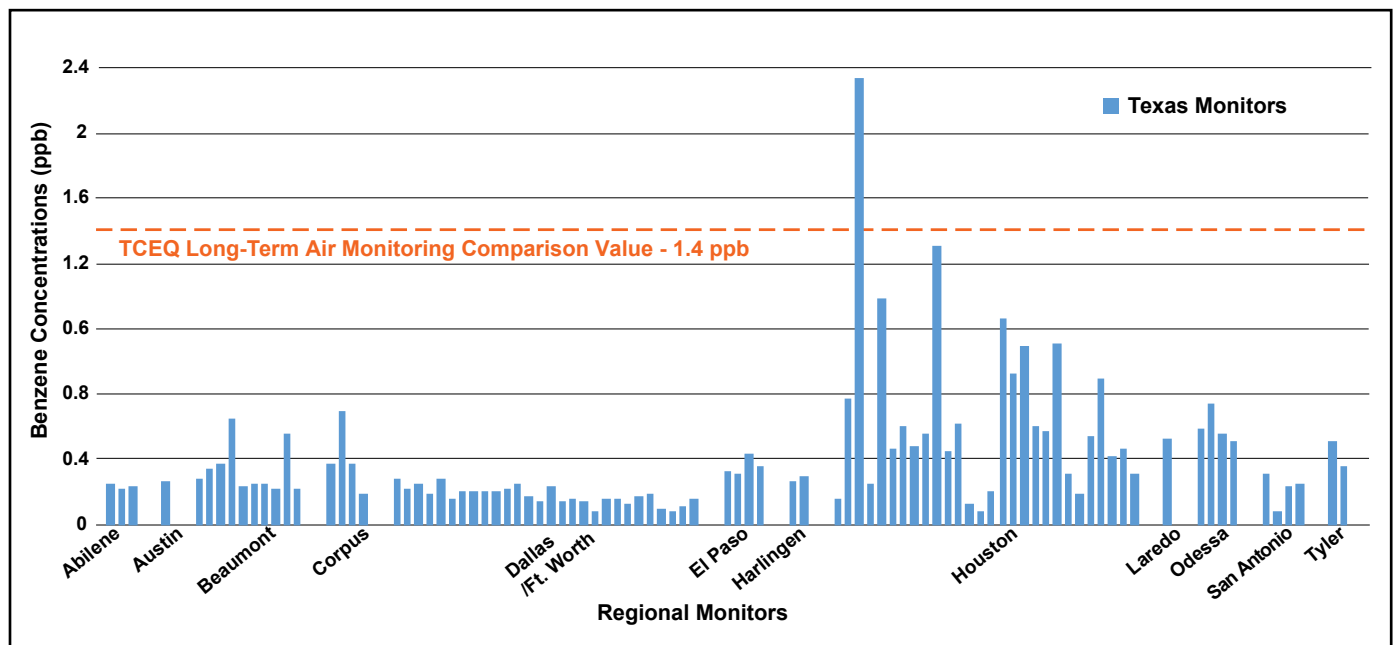


FIGURE 1
Average Benzene Concentrations at Monitoring Sites in Texas in 2020



Air Pollutant Watch List (APWL)

- The APWL is a TCEQ program designed to address areas in Texas where data show persistent, elevated concentrations of air toxics (Figure 3).
- More information regarding the TCEQ APWL program can be accessed at www.tceq.texas.gov/toxicology/apwl.

Active Air Pollutant Watch List Areas

Currently there are four active APWL areas (Table 1).

Four Regions: Tyler, El Paso, Beaumont, Houston	Five Pollutants: Hydrogen sulfid Metals: nickel, arsenic, cobalt, vanadium
--	---

Air Pollutant Watch List Successes

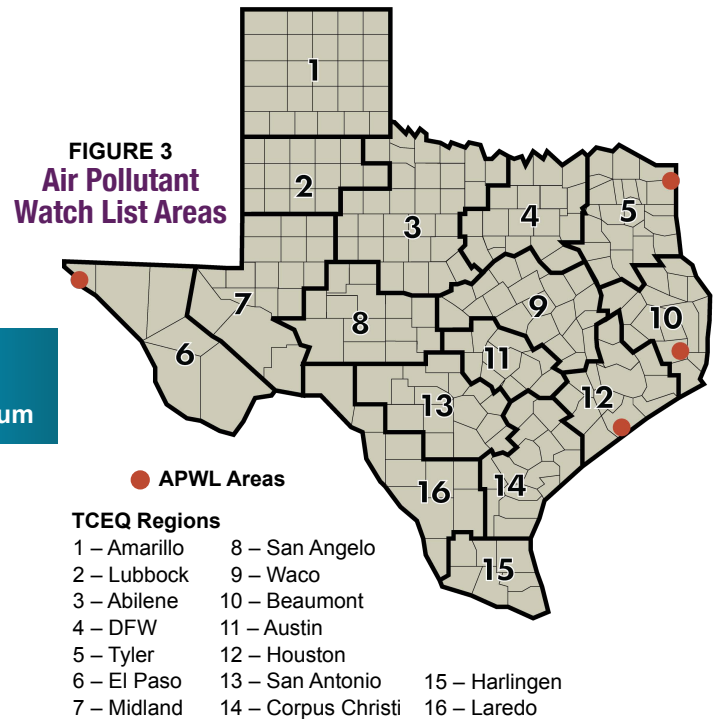
TCEQ has used the APWL process to address areas of concern and delist pollutants and/or areas from the APWL. The following table shows the pollutants and/or areas where ambient chemical concentrations have been successfully reduced to levels that are no longer of potential concern (Table 2).

TABLE 1
Active Air Pollutant Watch List Areas

APWL	City	County	Pollutant(s)	Added
0501	N/A	Bowie and Cass	Hydrogen sulfid	1999
0601	El Paso	El Paso	Hydrogen sulfid	2004
1001	Evadale	Jasper	Hydrogen sulfid	2003
1201	Freeport	Brazoria	Arsenic, cobalt, nickel, vanadium	2005

TABLE 2
Air Pollutant Watch List Successes

APWL	City	County	Pollutant(s)	Added	Removed
0401	Dallas	Dallas	Nickel	2004	2016
0701	Odessa	Ector	Ethylene	2001	2007
1002	Beaumont	Jefferson	Hydrogen sulfid	2002	2009
			Benzene	2004	2010
			Sulfur Dioxide	2003	2016
1003	Port Arthur	Jefferson	Benzene	2001	2014
1004	Port Neches	Jefferson	1,3-Butadiene	1996	2009
1101	Bastrop	Bastrop	Hydrogen sulfid	2007	2012
1202	Texas City	Galveston	Acrolein, butyraldehyde, valeraldehyde	2001	2010
			Benzene	2003	2014
			Hydrogen sulfid	2004	2014
			Propionaldehyde	2001	2016
1203	Texas City	Galveston	Benzene	2004	2007
1204	Lynchburg Ferry area	Harris	Benzene	2002	2010
			Styrene	2003	2014
1206	Galena Park	Harris	Benzene	2000	2017
1207	Houston (Milby Park area)	Harris	1,3-Butadiene	1999	2009
1401	Point Comfort	Calhoun	Ethylene dichloride	2004	2007
1402	Corpus Christi	Nueces	Benzene	1998	2010



Drinking Water Notices

Passage of House Bill 3030, 78th Regular Legislative Session (2003), resulted in a modification to the Texas Water Code, Section 26.408. The statute requires that when TCEQ receives notice from another agency, or when TCEQ independently documents a case of groundwater contamination, TCEQ must make every effort to provide notice, via first class mail, to each owner of a private drinking water well that may be affected by the contamination. The notice must be provided within 30 days of the determination or of the receipt of information from another agency.

Thirty-six new cases of contamination during calendar year 2020 required notice to private drinking water well owners (Table 3).

TABLE 3
Cases of Groundwater Contamination Requiring Notice to Private Drinking Water Well Owners in 2020

TCEQ Region	Number of Cases
1 – Amarillo	1
2 – Lubbock	1
3 – Abilene	1
4 – Dallas/Ft Worth	5
5 – Tyler	2
7 – Midland	3
10 – Waco	3
12 – Houston	15
13 – San Antonio	1
14 – Corpus Christi	2
15 – Harlingen	1
16 – Laredo	1



Health Indicators

Health indicators are quantitative or qualitative measures that can be used to assess the health of a given population. In epidemiology studies, air quality is often linked to premature death, cancer, and damage to the respiratory and cardiovascular systems. To gain a better understanding of the health of Texans in the various regions of the state, the TCEQ Toxicology, Risk Assessment, and Research Division began routinely reviewing health data collected by the Texas Department of State Health Services (DSHS) and the Centers for Disease Control and Prevention (CDC). All data presented on the following pages are estimates, because it may only include a sample of the population. Self-reported and under-reported cases of disease and illness are also limitations of the data sets. Differences in results from various reporting agencies may also occur. More information about the sources for the health data can be found in the Data Sources List at the end of the report.

Lead Data

In 1995, the 74th Texas legislature passed a law requiring the reporting of elevated blood lead levels in children under age 15. DSHS maintains the registry of blood lead results.

- According to data from the Texas Blood Lead Surveillance Branch, statewide elevated blood lead levels (levels higher than 5 micrograms per deciliter ($\mu\text{g}/\text{dL}$) in children have decreased from 2012-2019 (Figure 4).
- The number of children tested for elevated blood levels has been consistent from 2012 to 2019 (Figure 5).
- The latest publicly available national lead exposure statistics are for the year 2018.
- In 2021, the CDC lowered the blood lead reference value from 5 to 3.5 $\mu\text{g}/\text{dL}$.

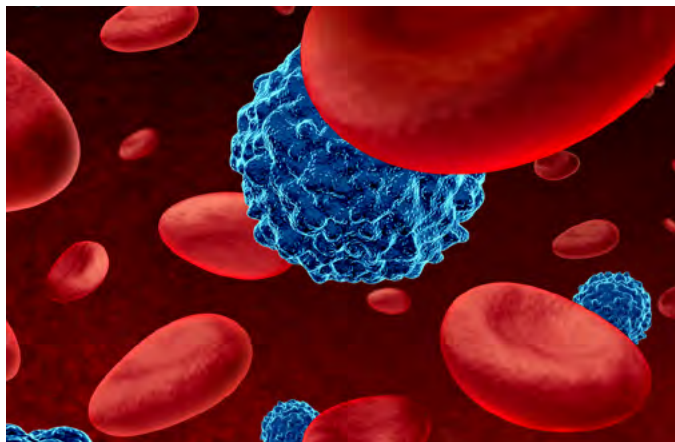
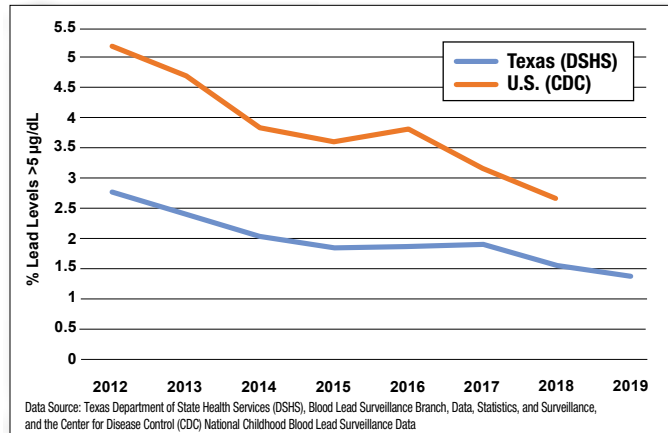


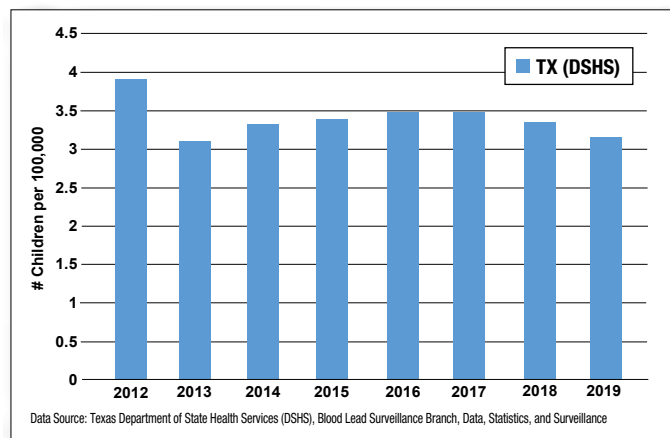
FIGURE 4
Percent Elevated Blood Lead Levels in Children (<6 years of age)



All data presented on the following pages are estimates, because it may only include a sample of the population.

- CDC recommends that children with a blood lead level at or above the blood lead reference value of 3.5 $\mu\text{g}/\text{dL}$ be referred for follow-up to determine potential sources of lead in their environment. More information can be found at <https://www.cdc.gov/nceh/lead/prevention/blood-lead-levels.htm>.

FIGURE 5
Number of Children Tested for Elevated Blood Lead Levels in Texas



Cancer Data

■ According to the United States Surveillance, Epidemiology, and End Results Program (SEER), statewide cancer incidence rates (all cancers) in Texas from 2015 to 2019 are among the lowest in the United States (Figure 6), even though Texas has more industrial activity than many other states. It is important to note that the environment is only one factor that may contribute to adverse health outcomes such as cancer.

Region-specific cancer rates are presented in subsequent sections.

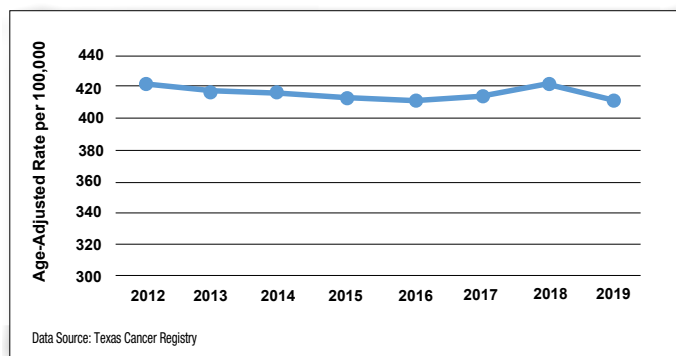
- **General risk factors for cancer include:**
 - Personal or family history of cancer
 - Tobacco use/smoking
 - Obesity
 - Alcohol consumption
 - Some types of viral infections, such as human papillomavirus (HPV)
 - Exposure to carcinogenic chemicals
 - Exposure to radiation, including ultraviolet radiation from the sun
 - Older age

Source: Division of Cancer Prevention and Control, CDC

■ According to data from the Texas Cancer Registry, statewide age-adjusted cancer incidence rates in Texas remained relatively constant from 2012 to 2019 (Figure 7).

It is important to note that the environment is only one factor that may contribute to adverse health outcomes such as cancer.

FIGURE 7
Cancer Incidence Rates in Texas, 2012-2019



■ From 2015-2019, Texas average age-adjusted cancer rates per 100,000 for all leukemias combined were similar to the overall United States rates, but lower for lung and bronchial cancers (not adjusted for smoking) as well as non-Hodgkin's lymphoma. Texas rates for leukemias and lung and bronchial cancers were slightly higher than in California, but lower for non-Hodgkin's lymphoma (Figure 8).

FIGURE 6
Cancer Incidence Rates for the United States, 2015-2019

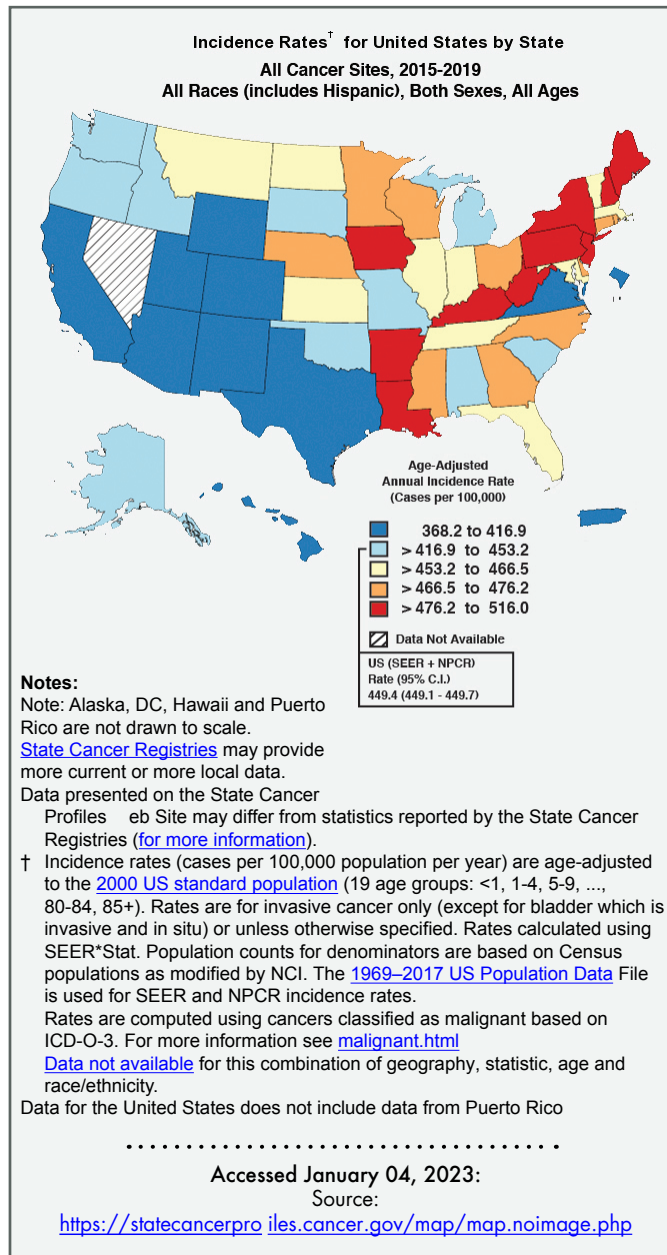
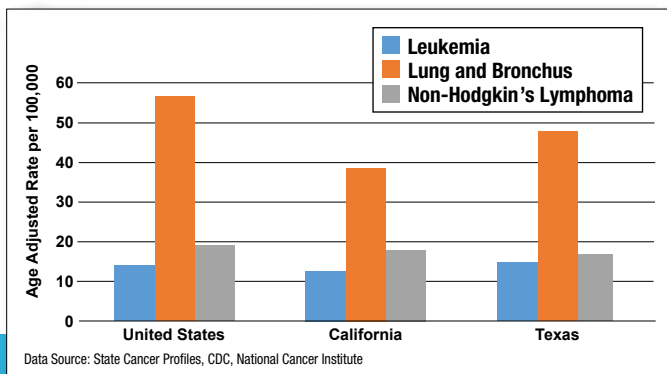


FIGURE 8
Average Age-Adjusted Cancer Incidence Rates for Leukemias, Lung and Bronchus Cancers, and Non-Hodgkin's Lymphoma, 2015-2019



Asthma Data

Asthma is a complex disease that is difficult to measure. As reported by the Texas Asthma Control Program (TACP) for the DSHS, the burden of asthma disproportionately affects people with certain demographic characteristics, socioeconomic status, and those living in particular geographic locations. To understand the entire burden of asthma in a community, all asthma indicators should be considered.

Region-specific asthma data are presented in subsequent sections.

Risk factors for asthma include:

- Family history of asthma
- Viral respiratory infection in infancy or childhood
- Atopy/allergies
- Occupational exposure to dust or chemical fumes
- Tobacco smoking, maternal smoking during pregnancy, or exposure to secondhand smoke
- Exposure to air pollution
- Obesity

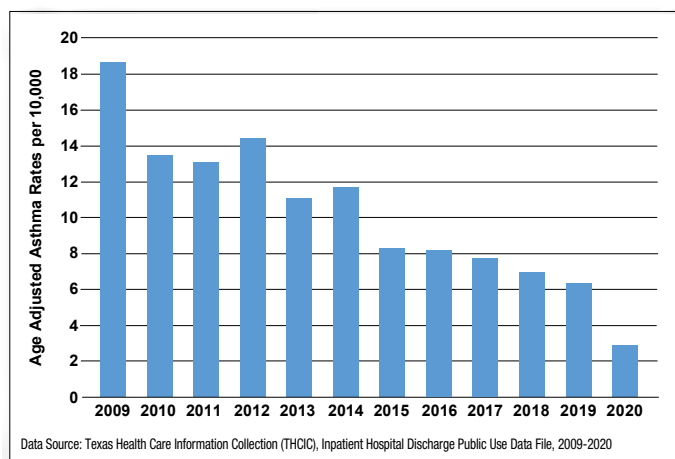
Sources: National Center for Environmental Health and CDC's National Asthma Control Program.

Asthma Hospitalizations (2009–2020)

- In 2020, for every 10,000 children under 18 years of age, 2.9 asthma hospitalizations occurred annually in Texas. This represents a decrease of more than 80% compared to 2009, when the age-adjusted asthma hospitalization rate was 18.6 per 10,000 (Figure 9a).

FIGURE 9A

Texas Age-Adjusted Asthma Hospital Discharge Rates in Children under 18 years, 2009-2020

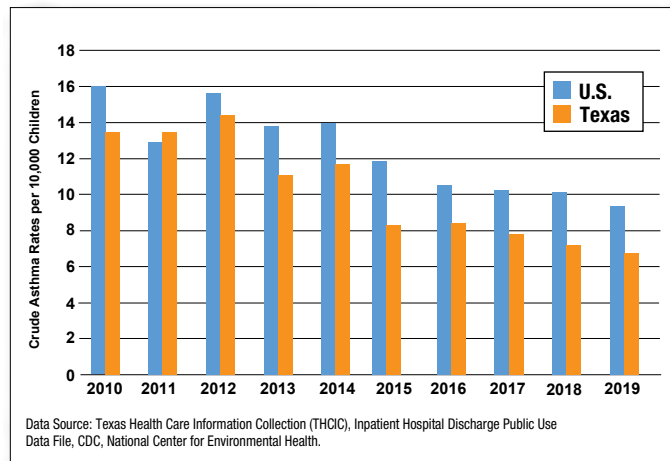


- In 2019, the crude (non-age-adjusted) national asthma hospitalization rate for children under age 18 was 8.8 per 10,000 compared to the crude rate of 6.6 per 10,000 for children under age 18 in Texas (Figure 9b). Although the

crude rates can bias the comparison between different regions, they are used because age-adjusted asthma hospitalization rates are not available at the national level.

FIGURE 9B

Nationwide and Texas Crude Asthma Hospital Discharge Rates in Children under 18 years, 2010-2019

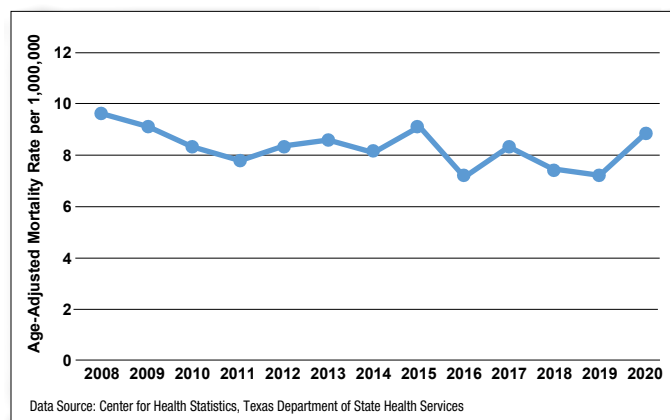


Asthma Mortality (2008-2020)

- In Texas, the age-adjusted asthma mortality rate decreased from 9.7 per 1 million people in 2008 to 9.0 per 1 million people in 2020, a reduction of approximately 7% (Figure 10a).

FIGURE 10A

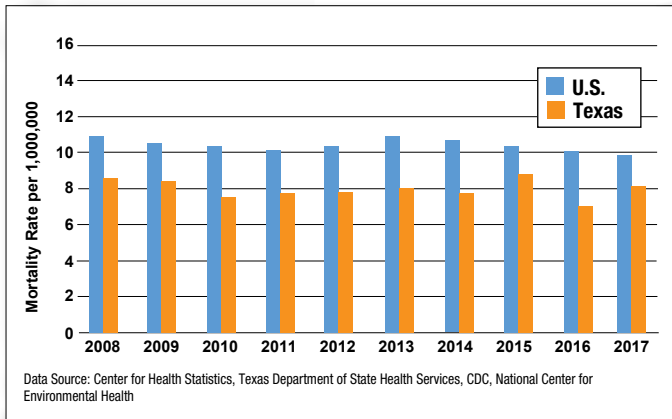
Texas Age-Adjusted Asthma Mortality Rates, All Ages, 2008-2020



- Crude asthma mortality rates per 1 million people in Texas were lower than the national rates from 2008 - 2017 (the latest year of data available) (Figure 10b).
- Asthma mortality rates per 10,000 people for the United States are not age-adjusted. Thus, Texas crude (non-age-adjusted) asthma mortality rates per 10,000 were compared to the national values and that may have a potential for bias.

FIGURE 10B

Crude Asthma Mortality Rates, All Ages, 2008–2017



Mortality in Texas

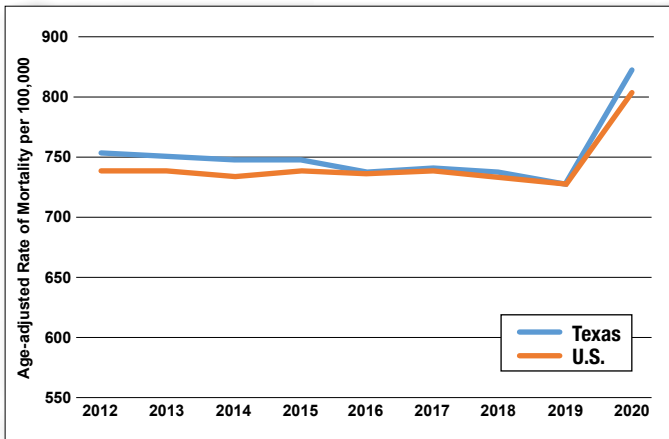
- In 2020, the top 10 leading causes of death in Texas were: diseases of the heart; malignant neoplasms (cancer); COVID-19; accidents (unintentional injuries); Alzheimer’s disease; cerebrovascular diseases (stroke and aneurysms); chronic lower respiratory tract diseases (emphysema, chronic bronchitis and asthma); diabetes mellitus; chronic liver disease and cirrhosis; and nephritis, nephrotic syndrome, and nephrosis (kidney disease).

TABLE 4.
Top 10 Leading Causes of Death in Texas in 2020

Leading Causes of Death	Deaths	Population	Crude Rate Per 100,000	Age Adjusted Rate Per 100,000 (95% Confidence Interval)	
Diseases of Heart	50,281	29,360,759	171.3	173.9	(172.3 - 175.4)
Malignant neoplasms	42,142	29,360,759	143.5	139.8	(138.5 - 141.2)
COVID-19	30,840	29,360,759	105	105.2	(104.0 - 106.3)
Accidents (unintentional injuries)	12,919	29,360,759	44	44.2	(43.4 - 45.0)
Alzheimer disease	11,918	29,360,759	40.6	44.6	(43.8 - 45.4)
Cerebrovascular diseases	11,667	29,360,759	39.7	41.1	(40.3 - 41.8)
Chronic lower respiratory diseases	10,402	29,360,759	35.4	36.2	(35.5 - 36.9)
Diabetes mellitus	7,990	29,360,759	27.2	26.7	(26.1 - 27.3)
Chronic liver disease and cirrhosis	4,930	29,360,759	16.8	15.8	(15.4 - 16.3)
Nephritis, nephrotic syndrome, and nephrosis	4,400	29,360,759	15	15.1	(14.6 - 15.5)

- From 2012-2020, Texas mortality rates per 100,000 for all causes (Figure 11), diseases of the circulatory system (such as aneurysms, arrhythmias, and blood pressure conditions; Figure 12), and diseases of the respiratory system (such as asthma, pneumonia, and chronic obstructive pulmonary disease; Figure 13) were similar to the overall United States rates. The marked increase in mortality rates nationwide and in Texas in 2020 are attributed to the COVID-19 pandemic.

FIGURE 11
Mortality Rates for All Causes, 2012–2020



The marked increase in mortality rates nationwide and in Texas in 2020 are attributed to the COVID-19 pandemic.

FIGURE 13
Mortality from Diseases of the Respiratory System, 2012-2020

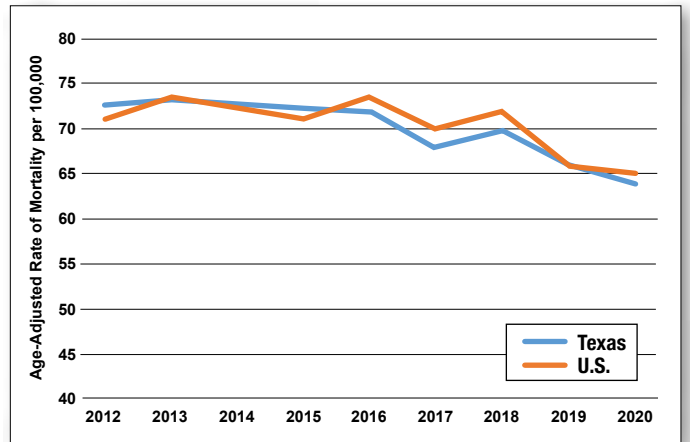
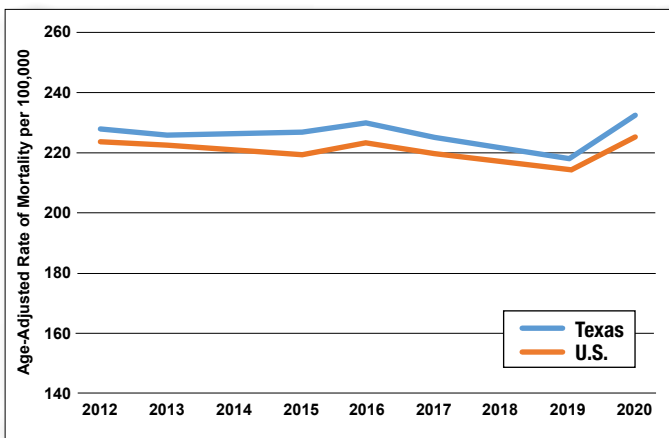


FIGURE 12
Mortality from Diseases of the Circulatory System, 2012-2020



All charts on this page have the same data source: Centers for Disease Control and Prevention, National Center for Health Statistics, Underlying Cause of Death.

Regional Updates

- Regional updates on asthma hospitalization rates per 10,000 among children under 18 years of age, as well as cancer incidence per 100,000 among people of all ages, are reported in subsequent sections. Regional data were compared to those of the state of Texas and the United States. Asthma hospitalization results do not include human immunodeficiency virus (HIV) or drug/alcohol-abuse patients and are based on hospital records listing ICD-10 code J45-J46 as the principal diagnosis.
- Asthma hospitalization rates per 10,000 people for the United States are not age-adjusted. Thus, crude (non-age-adjusted) asthma hospitalization rates per 10,000 were used when regional and Texas data were compared to national values and that may have a potential for bias.
- The latest publicly available national asthma hospitalization statistics are for the year 2019.

Region 1: Amarillo Area

(Armstrong, Carson, Oldham, Potter, and Randall Counties)

- In 2020, annual averages for all monitored VOCs were below their respective long-term AMCVs, and short-term concentrations of VOCs were below their respective AMCVs. Measured concentrations of VOCs would not be expected to cause adverse acute or chronic health or vegetation effects.
- From 2010-2020, Amarillo area crude (non-age-adjusted) asthma hospitalization rates per 10,000 were higher than the overall Texas and United States (2010-2019) rates for children under 18 years of age (Figure 14).
- From 2015-2019, Amarillo area average cancer incidence rates for all cancers per 100,000 were slightly above Texas rates for all ages in Potter, Armstrong, and Randall counties but were lower than Texas rates for Oldham and Carson counties. Cancer incidence rates for all the counties were lower than United States rates, except for Potter County (Figure 15).

FIGURE 14

Amarillo Area: Crude Child Asthma Hospital Discharge Rates (per 10,000), 2010-2020

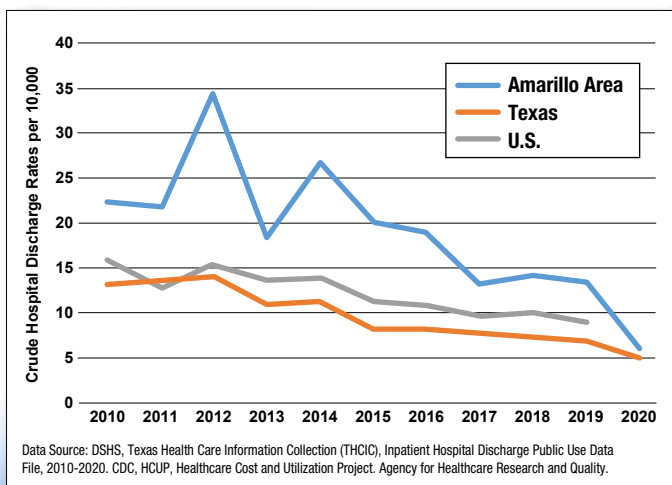
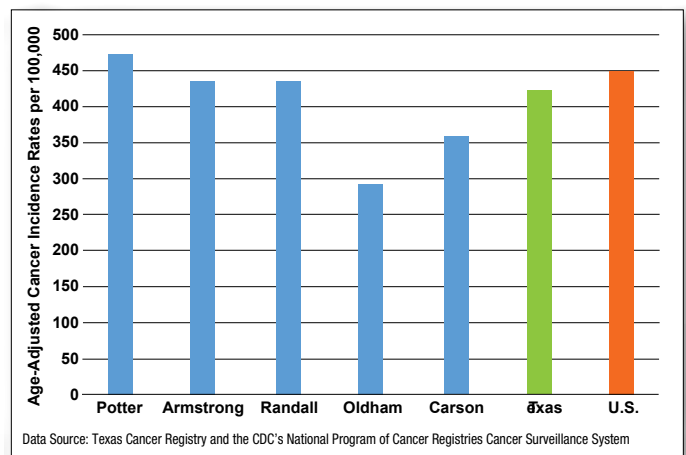


FIGURE 15

Amarillo Area: 2015-2019 Average Cancer Incidence Rates per 100,000

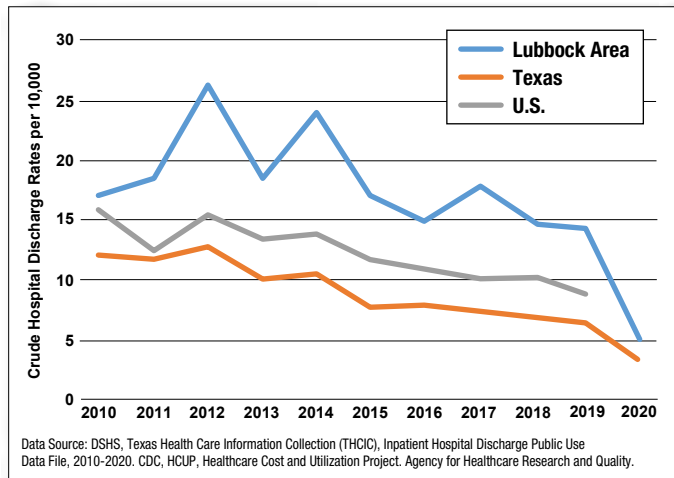


Region 2: Lubbock Area

(Crosby, Lubbock, and Lynn Counties)

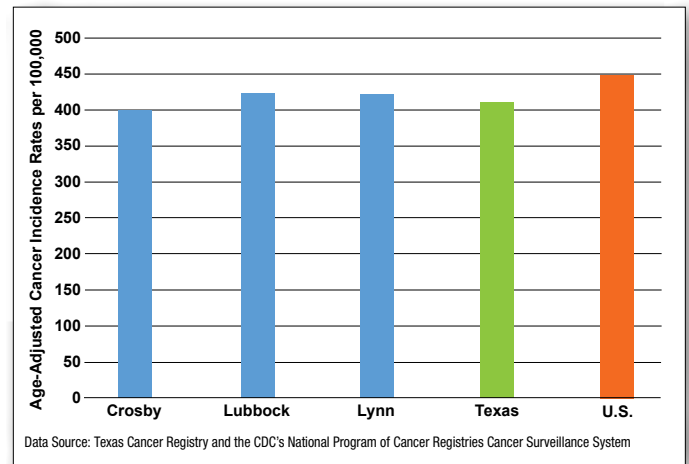
- From 2010-2020, Lubbock area crude (non-age-adjusted) asthma hospitalization rates per 10,000 (Figure 16) were higher than the overall Texas and United States (2010-2019) rates for children under 18 years of age (Figure 16).

FIGURE 16
Lubbock Area:
Crude Child Asthma Hospital Discharge Rates
(per 10,000), 2010-2020



- From 2015-2019, Lubbock area average cancer incidence rates for all cancers per 100,000 (Figure 17) were lower than the Texas rates in Crosby County and higher in Lubbock and Lynn Counties for all ages. Cancer incidence rates for all the counties were lower than United States rates (Figure 17).

FIGURE 17
Lubbock Area:
2015-2019 Average Cancer Incidence
Rates per 100,000



Region 3: Abilene Area

(Taylor, Callahan, and Jones Counties)

- In 2020, annual averages for all monitored VOCs were below their respective long-term AMCVs, and short-term concentrations of VOCs were below their respective AMCVs. Measured concentrations of VOCs would not be expected to cause adverse acute or chronic health or vegetation effects.
- From 2010-2020, Abilene area crude (non-age-adjusted) asthma hospitalization rates per 10,000 (Figure 18) were higher than the overall Texas and United States (2010-2019) rates for children under 18 years of age (Figure 18).

- From 2015-2019, Abilene area average cancer incidence rates for all cancers per 100,000 (Figure 19) were similar to the overall Texas rates for all ages and were similar to or lower than the rates in the United States as a whole (Figure 19).

FIGURE 18
Abilene Area:
Crude Child Asthma Hospital Discharge Rates (per 10,000), 2010-2020

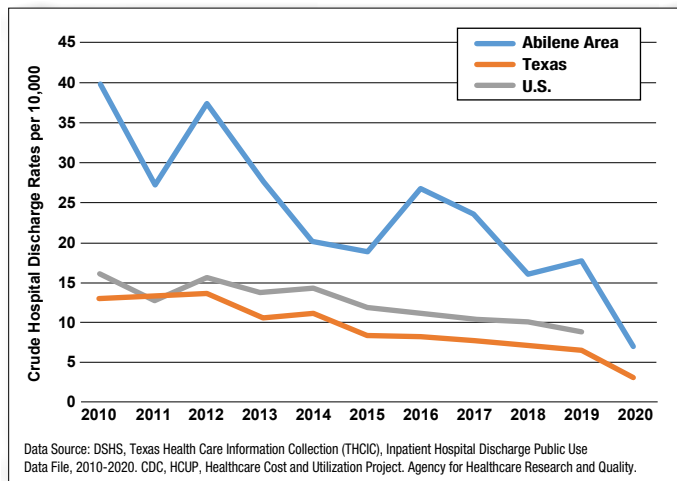
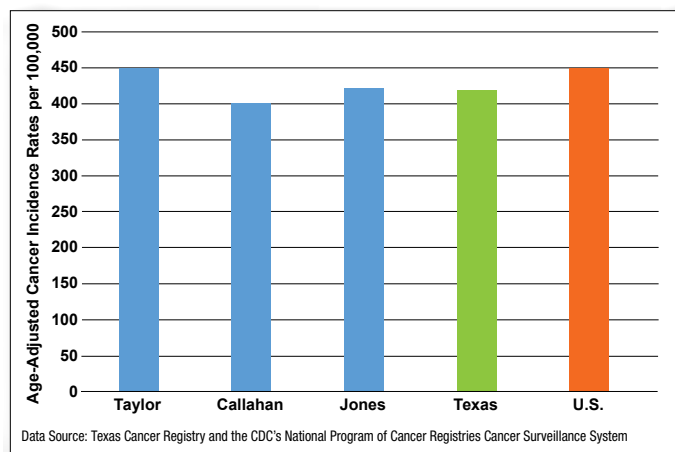


FIGURE 19
Abilene Area:
2015-2019 Average Cancer Incidence Rates per 100,000



Region 4: Dallas-Fort Worth Area

(Dallas, Hunt, Parker, Kaufman, Johnson, Tarrant, Ellis, Hood, Denton, Rockwall, Collin, and Wise Counties)

- In 2020, annual averages for all monitored VOCs, carbonyls and metals were below their respective long-term AMCVs, and short-term concentrations were below their respective AMCVs. Reported 30-minute concentrations of hydrogen sulfide (H_2S) were also below the numerical value of the 30-minute state H_2S standard for residential areas. Measured concentrations of these chemicals would not be expected to cause adverse acute or chronic health or vegetation effects.

- From 2010-2020, Dallas-Fort Worth area crude (non-age-adjusted) asthma hospitalization rates per 10,000 were lower than the overall Texas and United States (2010-2019) rates for children under 18 years of age (Figure 20).
- From 2015-2019, average cancer incidence rates for all cancers per 100,000 in most of the counties in the Dallas-Fort Worth area were similar to or slightly higher than the overall Texas and United States rates for all ages (Figure 21).

FIGURE 20
Dallas-Fort Worth Area:
Crude Child Asthma Hospital Discharge Rates
(per 10,000), 2010-2020

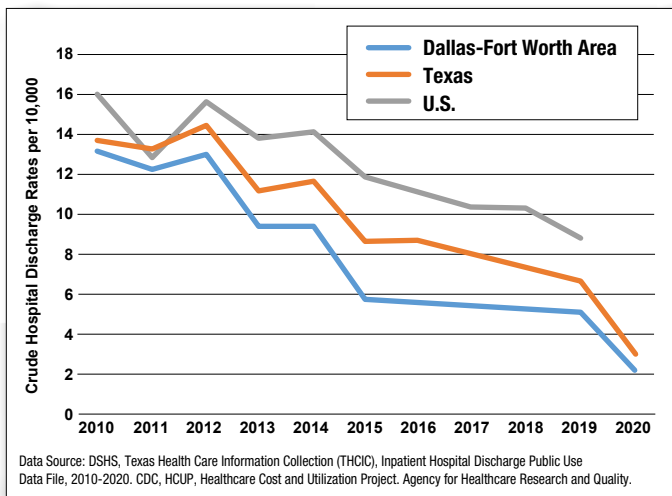
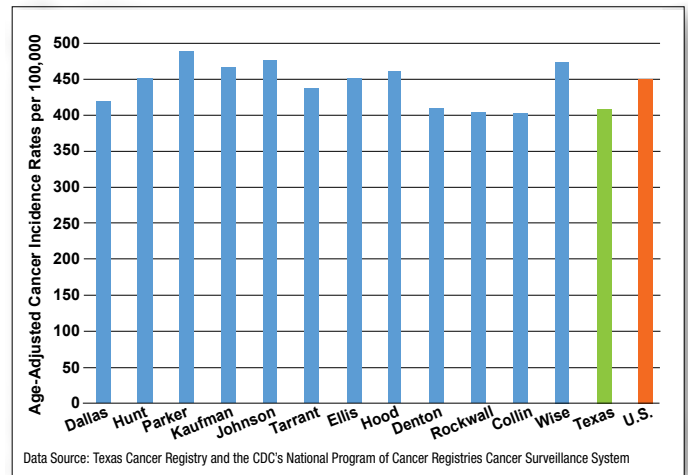


FIGURE 21
Dallas-Fort Worth Area:
2015-2019 Average Cancer Incidence
Rates per 100,000



Region 5: Tyler Area

(Smith County)

- In 2020, annual averages for all monitored VOCs and metals were below their respective long-term AMCVs, and short-term concentrations were below their respective AMCVs. Measured concentrations of these chemicals would not be expected to cause adverse acute or chronic health or vegetation effects.
- From 2010-2020, Tyler area crude (non-age-adjusted) asthma hospitalization rates per 10,000 were lower than

the overall Texas (except for 2019 and 2020) and United States (2010-2019) rates for children under 18 years of age (Figure 22).

- From 2015-2019, Tyler area average cancer incidence rates for all cancers per 100,000 were higher than the overall Texas rates for all ages but were similar to the United States average (Figure 23).

FIGURE 22
Tyler Area:
Crude Child Asthma Hospital Discharge Rates
(per 10,000), 2010-2020

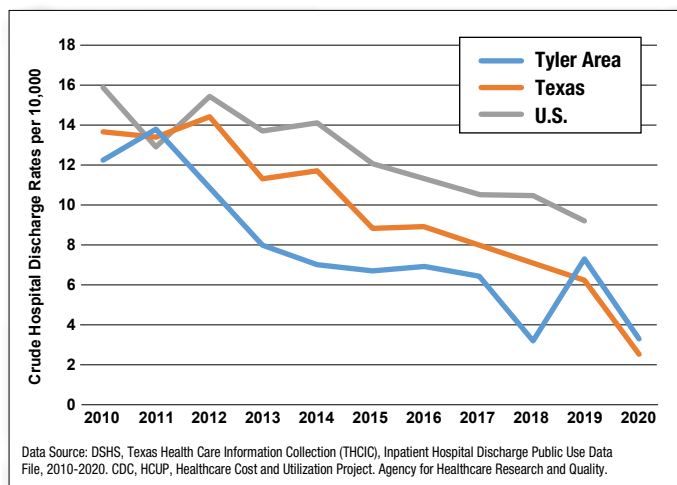
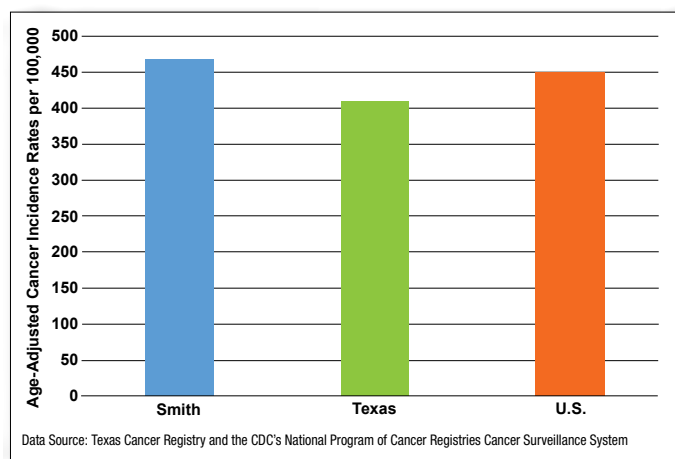


FIGURE 23
Tyler Area:
2015-2019 Average Cancer Incidence
Rates per 100,000



Region 6: El Paso Area

(El Paso and Hudspeth Counties)

- In 2020, annual averages for all monitored VOCs and metals were below their respective long-term AMCVs, and short-term concentrations were below their respective AMCVs. Measured concentrations of these chemicals would not be expected to cause adverse acute or chronic health or vegetation effects.
- In 2020, the reported 30-minute concentrations of hydrogen sulfide (H_2S) were above the numerical value of the 30-minute state H_2S standard for residential areas 341 times. The measured levels of H_2S could result in the perception of odors if exposure were to occur, although direct

health effects from exposure to H_2S are not expected. This area of El Paso is currently on the air pollutant watch list (APWL0601) for H_2S .

- From 2010-2020, El Paso area crude (non-age-adjusted) asthma hospitalization rates per 10,000 (Figure 24) were higher than the overall Texas and United States (2010-2019) rates for children under 18 years of age (Figure 24).
- From 2015-2019, El Paso area average cancer incidence rates for all cancers per 100,000 were similar to, or lower than both the United States and overall Texas rates for all ages (Figure 25).

FIGURE 24
El Paso Area:
Crude Child Asthma Hospital Discharge Rates
(per 10,000), 2010-2020

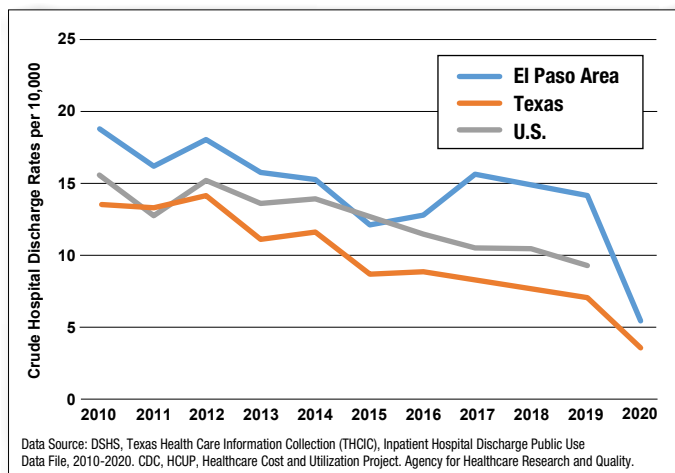
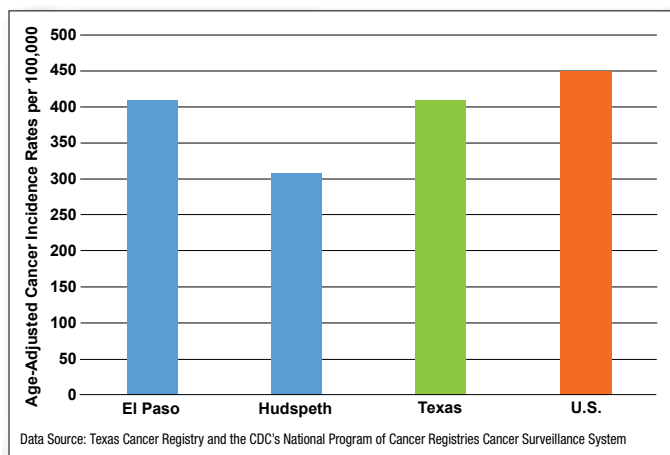


FIGURE 25
El Paso Area:
2015-2019 Average Cancer Incidence
Rates per 100,000



Region 7: Midland Area

(Midland and Martin Counties)

- In 2020, annual averages for all monitored VOCs were below their respective long-term AMCVs, and short-term concentrations of VOCs were below their respective AMCVs. Measured concentrations of VOCs would not be expected to cause adverse acute or chronic health or vegetation effects.
- In 2020, the reported 30-minute concentrations of hydrogen sulfide (H_2S) were above the numerical value of the 30-minute state H_2S standard for residential areas 75 and 77 times at the Odessa Westmark Street and Goldsmith Street monitoring sites, respectively. The measured levels of H_2S could result in the perception of odors if exposure were to occur, although direct health effects from exposure to H_2S are not expected.

- From 2010-2020, Midland area crude (non-age-adjusted) asthma hospitalization rates per 10,000 were similar to the overall Texas and United States (2010-2019) rates for children under 18 years of age. The rates in the Midland area increased from 2013-2016 but decreased in 2017, and by 2019 the rates were lower than the United States rates (Figure 26).
- From 2015-2019, Midland area average cancer incidence rates for all cancers per 100,000 were lower than both the overall Texas and United States rates for all ages in Midland County but were somewhat higher in Martin County (Figure 27).

FIGURE 26
Midland Area:
Crude Child Asthma Hospital Discharge Rates
(per 10,000), 2010-2020

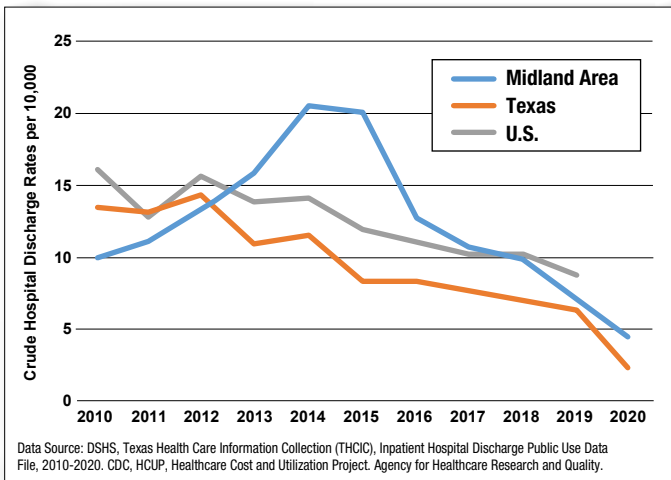
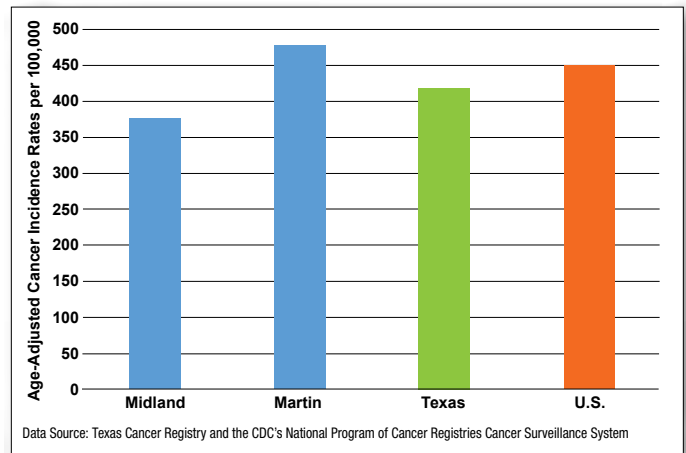


FIGURE 27
Midland Area:
2015-2019 Average Cancer Incidence
Rates per 100,000



Region 8: San Angelo Area

(Irion and Tom Green Counties)

- From 2010-2020, San Angelo area crude (non-age-adjusted) asthma hospitalization rates per 10,000 were higher than the overall Texas and United States (2010-2019) rates for children under 18 years of age, although the rates in 2019 were similar to the United States rates (Figure 28).

- From 2015-2019, San Angelo area average cancer incidence rates for all cancers per 100,000 were similar to the overall Texas and United States rates for all ages (Figure 29).

FIGURE 28
San Angelo Area:
Crude Child Asthma Hospital Discharge Rates
(per 10,000), 2010-2020

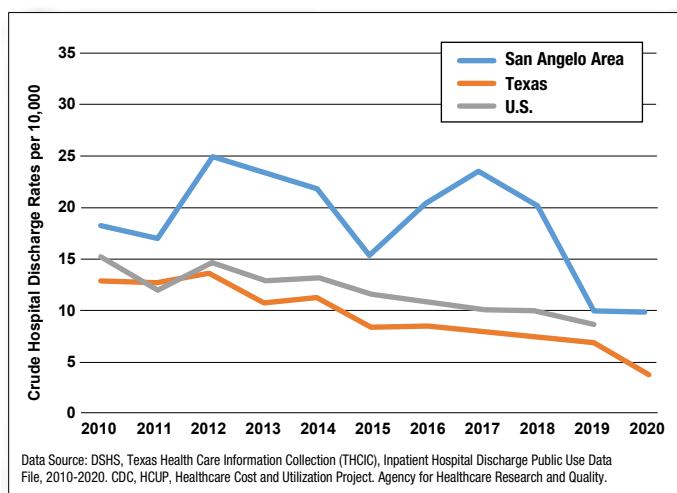
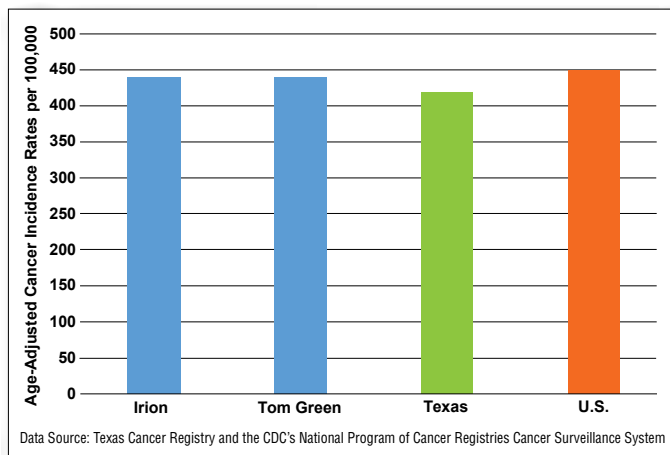


FIGURE 29
San Angelo Area:
2015-2019 Average Cancer Incidence
Rates per 100,000



Region 9: Waco Area

(McLennan and Falls Counties)

- From 2010-2020, Waco area crude (non-age-adjusted) asthma hospitalization rates per 10,000 were higher than the overall Texas and United States (2010-2019) rates for children under 18 years of age (Figure 30).
- From 2015-2019, Waco area average cancer incidence rates for all cancers per 100,000 were similar to the overall Texas and United States rates for all ages (Figure 31).

FIGURE 30
Waco Area:
Crude Child Asthma Hospital Discharge Rates
(per 10,000), 2010-2020

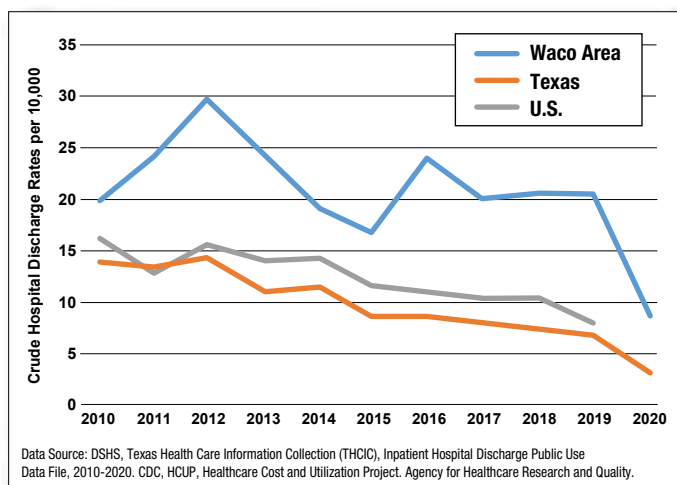
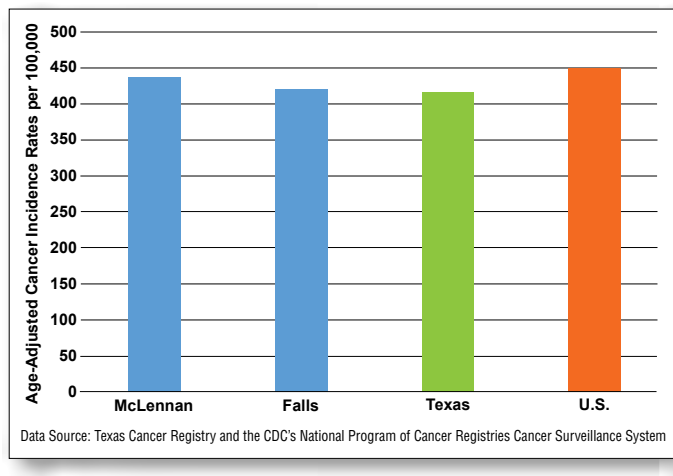


FIGURE 31
Waco Area:
2015-2019 Average Cancer Incidence
Rates per 100,000



Region 10: Beaumont Area

(Hardin, Jefferson, Newton, and Orange Counties)

- In 2020, annual averages for all monitored VOCs were below their respective long-term AMCVs, and short-term concentrations were below their respective AMCVs. Reported 30-minute concentrations of hydrogen sulfide (H₂S) were also below the numerical value of the 30-minute state H₂S standard for residential areas. Measured concentrations of these chemicals would not be expected to cause adverse acute or chronic health or vegetation effects.

- From 2010-2020, Beaumont area crude (non-age-adjusted) asthma hospitalization rates per 10,000 for children under 18 years of age were similar to the overall Texas rates (2010-2020), and lower than the United States rates from 2015 to 2019 (Figure 32).
- From 2015-2019, Beaumont area average cancer incidence rates for all cancers per 100,000 were similar to or slightly higher than the overall Texas and United States rates for all ages (Figure 33).

FIGURE 32
Beaumont Area:
Crude Child Asthma Hospital Discharge Rates
(per 10,000), 2010-2020

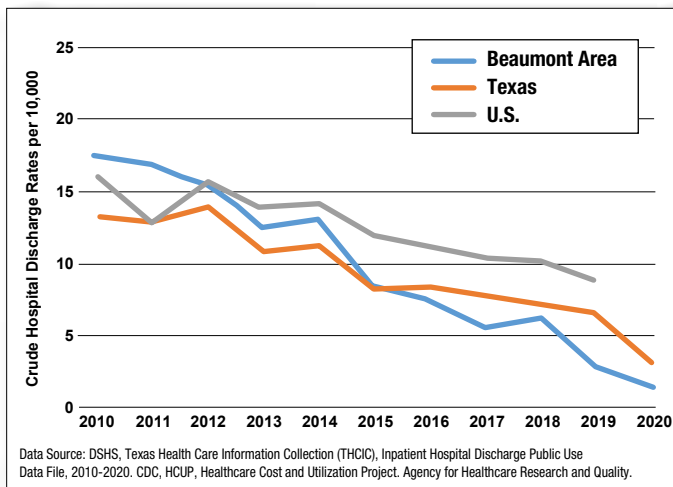
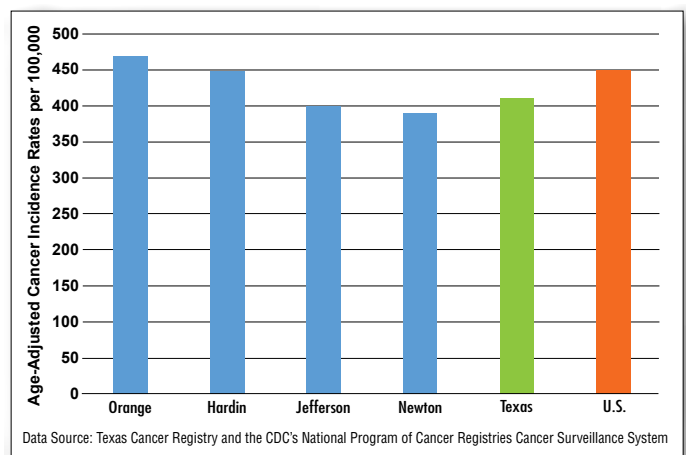


FIGURE 33
Beaumont Area:
2015-2019 Average Cancer Incidence
Rates per 100,000



Region 11: Austin Area

(Bastrop, Caldwell, Hays, Travis, and Williamson Counties)

- In 2020, annual averages for all monitored VOCs were below their respective long-term AMCVs, and short-term concentrations of VOCs were below their respective AMCVs. Measured concentrations of VOCs would not be expected to cause adverse acute or chronic health or vegetation effects.
- From 2010-2020, Austin area crude (non-age-adjusted) asthma hospitalization rates per 10,000 were similar to the overall Texas and United States (2010-2019) rates

for children under 18 years of age from 2010-2013, were slightly higher for 2014-2016, and were lower from 2018-2020 (Figure 34).

- From 2015-2019, Austin area average cancer incidence rates for all cancers per 100,000 for all ages were similar to or higher than the overall Texas rates but were not higher than United States rates (Figure 35).

FIGURE 34
Austin Area:
Crude Child Asthma Hospital Discharge Rates
(per 10,000), 2010-2020

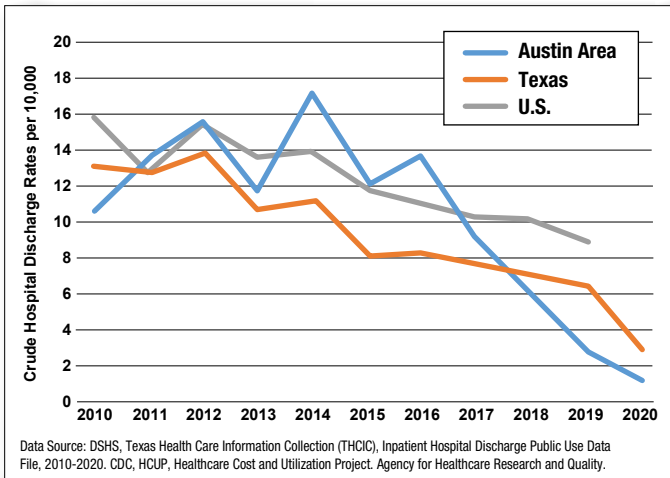
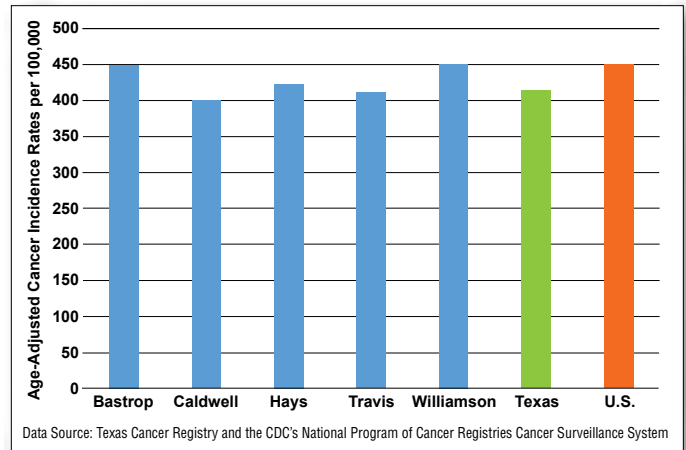


FIGURE 35
Austin Area:
2015-2019 Average Cancer Incidence
Rates per 100,000



Region 12: Houston Area

(Austin, Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, and Waller Counties)

- In 2020, except for the annual average of benzene at one monitoring site, annual average concentrations for all measured VOCs, carbonyls, and metals were below their respective long-term AMCVs. Measured concentrations of these chemicals, including benzene, would not be expected to cause adverse chronic health or vegetation effects.
- At Channelview Drive Water Tower (formerly Jacinto Port), the annual average of benzene exceeded the AMCV by 1.5 times. However, the fifteen-year average was below the long-term AMCV, which is a more appropriate comparison as the long-term AMCV is a lifetime value.
- In 2020, 6 measured hourly VOC concentrations (out of more than 4,216,250 samples) exceeded a 1-hr AMCV. These measured levels could result in the perception of odors if exposure were to occur, although direct health

effects from exposure are not expected. All other short-term measured concentrations of VOCs, carbonyls, and metals were below their respective short-term AMCVs. Reported 30-minute concentrations of H₂S were also below the numerical value of the 30-minute state H₂S standard for residential areas. Measured concentrations of these chemicals would not be expected to cause adverse acute health or vegetation effects.

- From 2010-2020, Houston area crude (non-age-adjusted) asthma hospitalization rates per 10,000 were lower than the overall Texas and United States (2010-2019) rates for children under 18 years of age (Figure 36).
- From 2015-2019, Houston area average cancer incidence rates for all cancers per 100,000 were similar to or slightly higher than the overall Texas rates for all ages and were similar to or lower than the rates in the United States as a whole (Figure 37).

FIGURE 36
Houston Area:
Crude Child Asthma Hospital Discharge Rates
(per 10,000), 2010-2020

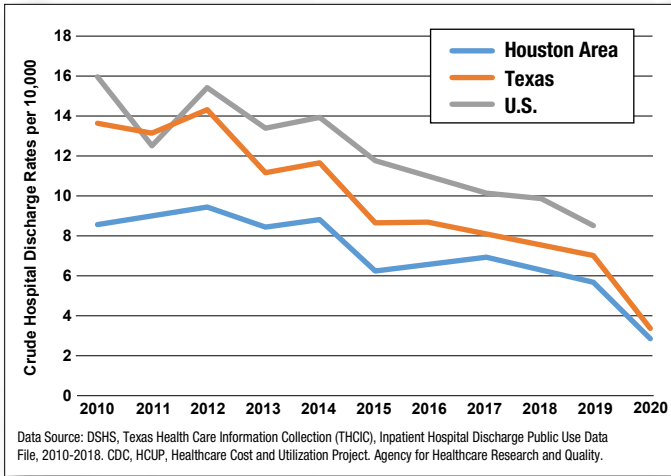
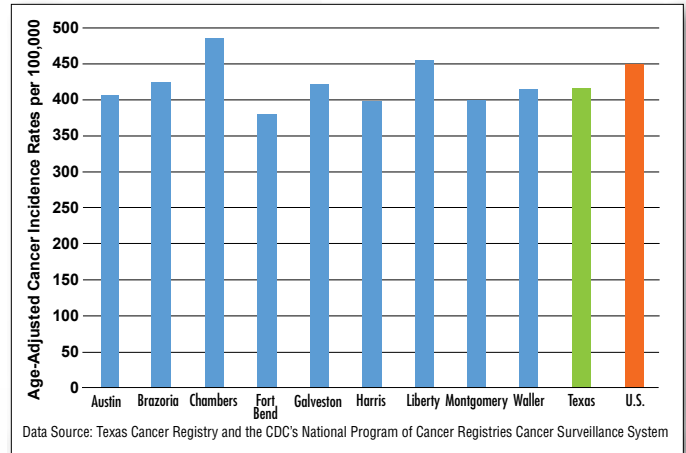


FIGURE 37
Houston Area:
2015-2019 Average Cancer Incidence
Rates per 100,000



Region 13: San Antonio Area

(Guadalupe, Comal, Kendall, Bexar, Bandera, Atascosa, Wilson, and Medina Counties)

- In 2020, annual averages for all monitored VOCs were below their respective long-term AMCVs, and short-term concentrations were below their respective AMCVs. Reported 30-minute concentrations of H₂S were also below the numerical value of the 30-minute state H₂S standard for residential areas. Measured concentrations of these chemicals would not be expected to cause adverse acute or chronic health or vegetation effects.
- From 2010-2020, San Antonio area crude (non-age-adjusted) asthma hospitalization rates per 10,000 were

higher than the overall Texas and United States (2010-2019) rates for children under 18 years of age (Figure 38).

- From 2015-2019, San Antonio area average cancer incidence rates for all cancers per 100,000 were similar to or lower than the overall Texas and United States rates for all ages (Figure 39).

FIGURE 38
San Antonio Area:
Crude Child Asthma Hospital Discharge Rates
(per 10,000), 2010-2020

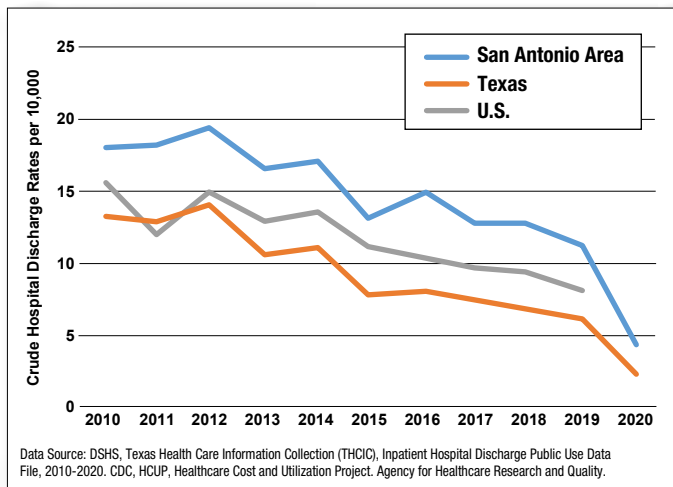
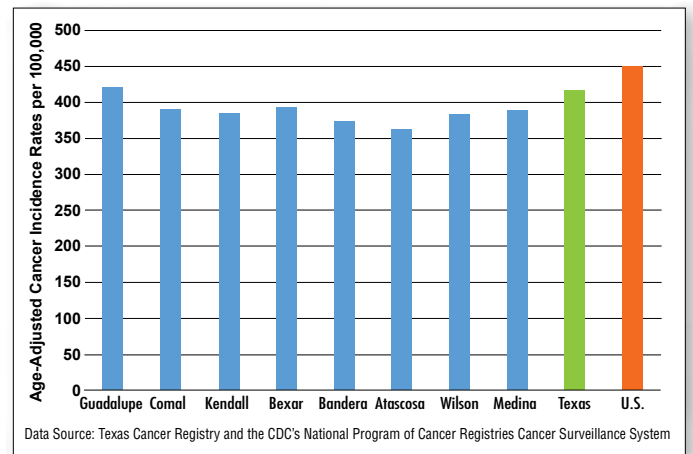


FIGURE 39
San Antonio Area:
2015-2019 Average Cancer Incidence
Rates per 100,000



Region 14: Corpus Christi Area

(Aransas, Nueces, and San Patricio Counties)

- In 2020, annual averages for all monitored VOCs and metals were below their respective long-term AMCVs, and short-term concentrations were below their respective AMCVs. Reported 30-minute concentrations of H₂S were also below the numerical value of the 30-minute state H₂S standard for residential areas. Measured concentrations of VOCs would not be expected to cause adverse acute or chronic health or vegetation effects.
- From 2010 to 2013, Corpus Christi area crude (non-age-adjusted) asthma hospitalization rates per 10,000 were higher than the overall Texas and United States rates for

children under 18 years of age. Starting in 2014 the asthma rates in Corpus Christi were similar to the overall Texas and United States rates. Asthma hospitalization rates in this area decreased from 29.7 per 10,000 people in 2010 to 1.4 per 10,000 people in 2020, a more than a 20-fold reduction (Figure 40).

- From 2015-2019, Corpus Christi area average cancer incidence rates for all cancers per 100,000 were similar to the overall Texas and United States rates for all ages (Figure 41).

FIGURE 40

Corpus Christi Area: Crude Child Asthma Hospital Discharge Rates (per 10,000), 2010- 2020

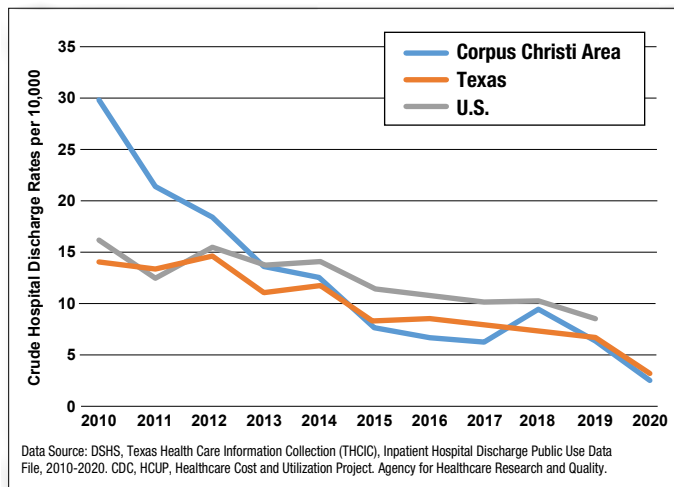
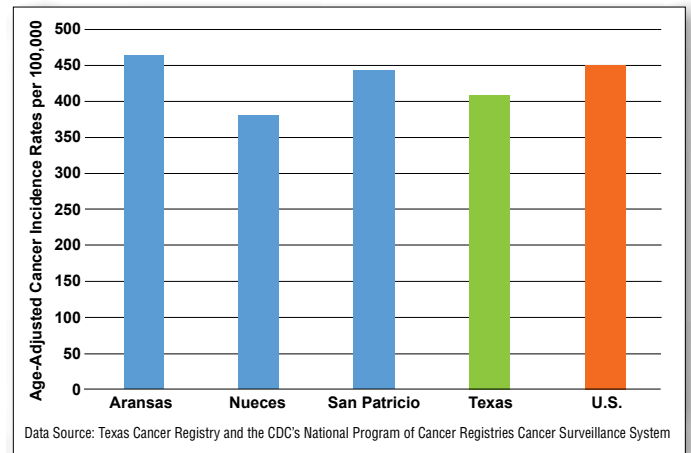


FIGURE 41

Corpus Christi Area: 2015-2019 Average Cancer Incidence Rates per 100,000



Region 15: Harlingen Area

(Cameron County)

- In 2020, annual averages for all monitored VOCs were below their respective long-term AMCVs, and short-term concentrations of VOCs were below their respective AMCVs. Measured concentrations of VOCs would not be expected to cause adverse acute or chronic health or vegetation effects.
- From 2010-2020, Harlingen area crude (non-age-adjusted) asthma hospitalization rates per 10,000 were lower

than the overall Texas and United States (2010-2019) rates for children under 18 years of age (Figure 42).

- From 2015-2019, the Harlingen area average cancer incidence rate for all cancers per 100,000 was lower than the overall Texas and United States rates for all ages (Figure 43).

FIGURE 42
Harlingen Area:
Crude Child Asthma Hospital Discharge Rates
(per 10,000), 2010-2020

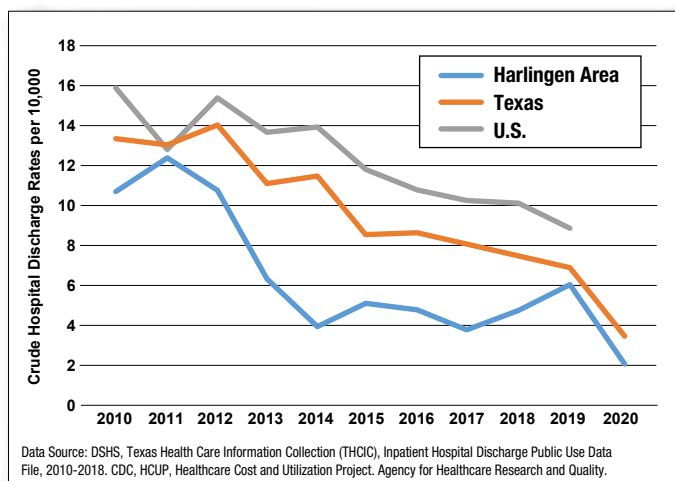
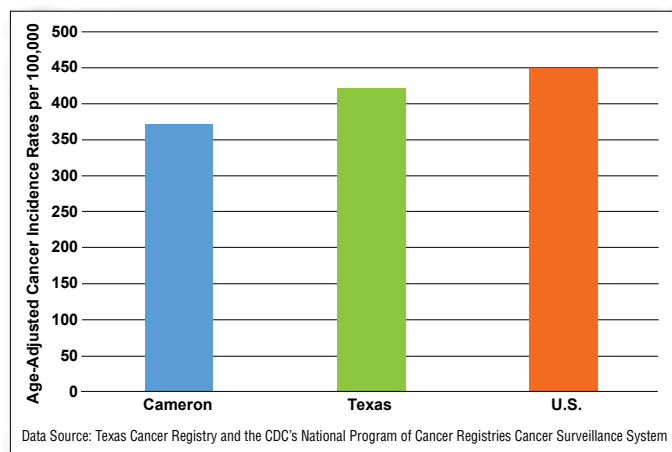


FIGURE 43
Harlingen Area:
2015-2019 Average Cancer Incidence Rates
per 100,000



Region 16: Laredo Area

(Webb County)

- In 2020, annual averages for all monitored VOCs were below their respective long-term AMCVs, and short-term concentrations of VOCs were below their respective AMCVs. Measured concentrations of VOCs would not be expected to cause adverse acute or chronic health or vegetation effects.
- From 2010-2019, Laredo area crude (non-age-adjusted) asthma hospitalization rates per 10,000 were generally lower than the overall Texas and United States (2010-2019) rates for children under 18 years of age. Fewer

than 12 asthma hospitalizations were reported in 2020 in the Laredo area, therefore no corresponding rates were reported (Figure 44).

- From 2015-2019, Laredo area average cancer incidence rates for all cancers per 100,000 were lower than the overall Texas and United States rates for all ages (Figure 45).

FIGURE 44
Laredo Area:
Crude Child Asthma Hospital Discharge Rates
(per 10,000), 2010-2020

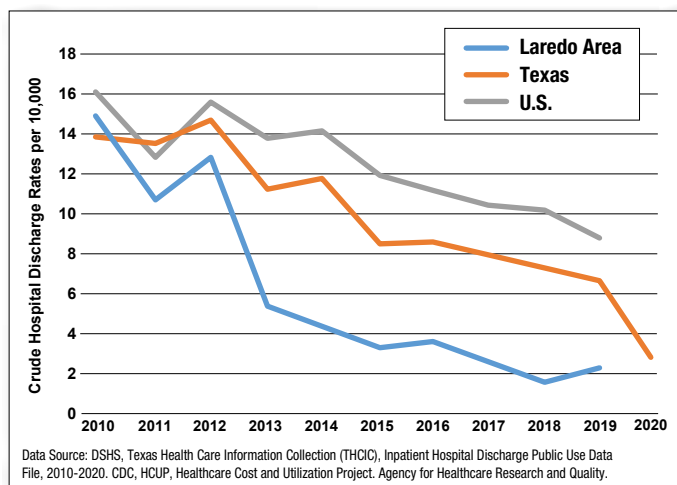
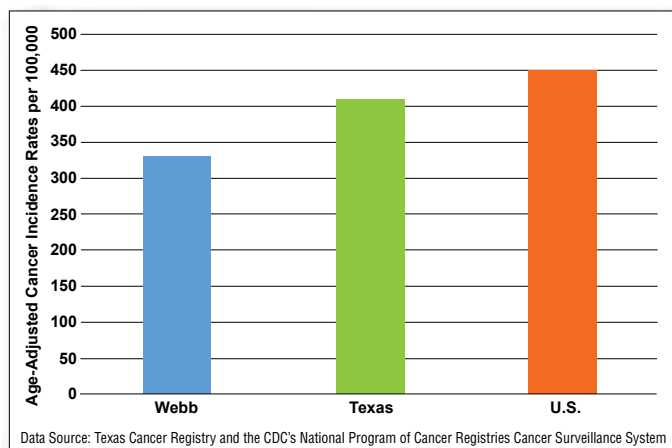
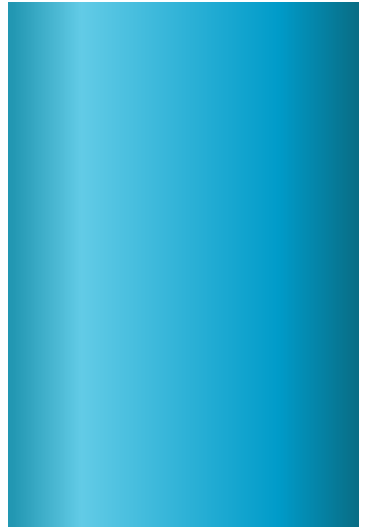


FIGURE 45
Laredo Area: 2015-2019 Average Cancer Incidence
Rates per 100,000



Data Sources List

1. Center for Disease Control and Prevention (CDC), Division of Cancer Prevention and Control. Risk factors and cancer. https://www.cdc.gov/cancer/risk_factors.htm (Accessed Dec 4, 2022)
2. CDC Asthma Data, Statistics, and Surveillance: Asthma-related Healthcare Use. <https://www.cdc.gov/asthma/national-surveillance-data/healthcare-use.htm> (Accessed Dec 15, 2022)
3. CDC National Asthma Control Program. <https://www.cdc.gov/asthma/nacp.htm> (Accessed Dec 15, 2022)
4. CDC National Center for Environmental Health (NCEH). Asthma. <https://www.cdc.gov/asthma/> (Accessed Dec 15, 2022)
5. CDC National Childhood Blood Lead Surveillance Data. <https://www.cdc.gov/nceh/lead/data/national.htm> (Accessed Jan 7, 2023)
6. CDC, United States Cancer Statistics: Data Visualizations web query tool. <https://gis.cdc.gov/Cancer/USCS/#/AtAGlance/> (Accessed Jan 10, 2023)
7. CDC. About Underlying Cause of Death, 1999-2020 web query tool. <https://wonder.cdc.gov/ucd-icd10.html> (Accessed Jan 11, 2023)
8. Texas Commission on Environmental Quality (TCEQ) Air Pollutant Watch List program. <https://www.tceq.texas.gov/toxicology/apwl> (Accessed Dec 18, 2022)
9. TCEQ 2020 evaluations of ambient air data by region. <https://www.tceq.texas.gov/toxicology/regmemo> (Accessed Jan 03, 2023)
10. TCEQ, Texas Air Monitoring Information System (TAMIS) database. <https://www17.tceq.texas.gov/tamis/index.cfm?fuseaction=home.welcome> (Accessed Jan 03, 2023)
11. Texas Department of State Health Services (DSHS), Blood Lead Surveillance Branch: Data, Statistics, and Surveillance. <https://www.dshs.texas.gov/blood-lead-surveillance-group/data-statistics-surveillance> (Accessed Jan 7, 2023)
12. DSHS, Chronic Disease Epidemiology Branch, Health Promotion and Chronic Disease Prevention Section. Childhood Asthma Hospitalizations, Texas, and Select Regions (2009-2021), and Overall Asthma Mortality, Texas (2009-2020)
13. DSHS, Texas Cancer Registry web query tool. <https://www.cancer-rates.info/tx/> (Accessed Jan 10, 2023)
14. United States Surveillance, Epidemiology, and End Results Program (SEER), National Cancer Institute; Interactive map. <https://statecancerprofiles.cancer.gov/map/map.noimage.php> (Accessed Jan 4, 2023)






How is our customer service?

Fill out our online customer-satisfaction survey at www.tceq.texas.gov/customersurvey

TCEQ is an equal opportunity employer. The agency does not allow discrimination on the basis of race, color, religion, national origin, sex, disability, age, sexual orientation, or veteran status.

 *Printed on recycled paper.*